An Idealized Computer-Based Patient Record for Teaching Diagnosis and Treatment Planning

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The computer-based patient record (CPR) will bring about radical changes in the practice of health care. In the Health Simulation System Simulation (HISS) Project we developed a CPR used by allied health students in the fields of health information management, medical technology, occupational therapy and physician assistant. Our CPR is an idealized patient record incorporating the latest technology in computerized information systems, graphics, and user interfaces. A major goal of the project is to teach students problem-solving skills in diagnosis and treatment planning through the use of the CPR. The purposes of this interactive poster are to present 1) the CPR and the software environment in which it is used and 2) evaluation results of the software's use by students.

The HISS operates in a local area network environment, combining a graphical user interface and a relational data base to simulate a state-of-the-art health information system. The Microsoft Windows-based applications were written using Asymetrix ToolBook. The CPR provides information on fictitious patients including sections on demographic and referral data, complete histories and physicals, laboratory results with normal values, rehabilitation assessments and graphics of X-rays, EKGs, and CT scans. Patient data are stored and managed by Borland dBase III Plus relational data base software. We created four simulated patient record databases: a geriatric stroke case, a pediatric leukemia case, a cardiac/hip fracture case, and an HIV case. The HIV case follows a patient's progress over seven years from a negative HIV test through the development of AIDS.

We developed applications, called MainBooks, to provide the interface between the student and the CPR. The MainBooks allow students to formulate differential and final diagnoses, and write patient care plans and progress notes. Within any HISS application, users can refer to sections of the HelpBook to access instructions on the use of the CPR, a multi-disciplinary glossary of acronyms and abbreviations, tutorials related to the patients in the CPR and third-party software, e.g., Iliad.

To evaluate how students use software and relate that to performance on problem-solving assignments, data were gathered on usage and performance. The usage variables were 1) the total number of times a student used each application; 2) how long the student used it; and 3) the number of times the student used each section of an application. These data were automatically gathered by tracking routines within each application. The performance measures were grades given by the instructors to the student's solution of a given problem. The students wrote, and instructors graded, the solutions using routines within the MainBooks.

Results showed negative correlations between performance and the number of times the students used the CPR, and between the number of times the MainBook was used and how long it was used. A positive correlation existed between performance and the number of times the HelpBook was used. Performance was not related to the number of sections of the CPR examined by the student. We concluded that students who performed better worked longer over fewer sessions and used the HelpBook.

We made several observations about student use of Windows software. 1) Students tend to make written notes instead of jumping back and forth to relevant sections of the CPR. 2) They close and reopen applications instead of switching between them. 3) When finished, they leave applications open instead of exiting. To enable students to optimally use the HISS, we are providing more training in navigating the Windows environment.

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